

ABSTRACT

The invention relates to methods for prevention of and recovery from a catalyst bed slumping in a gas-agitated multiphase hydrocarbon synthesis reactor, while the reactor is either under non-reactive conditions or under reaction promoting conditions when syngas is converted to products. The reactor contains a catalyst bed comprising catalyst particles and a gas injection zone suitable for injecting a reactor gas feed. A method for preventing bed slumping comprises supplying a supplemental gas to the gas-agitated multiphase reactor to prevent the catalyst bed from slumping due to insufficient reactor gas feed flow. The method may include recycling some or all of the supplemental gas to the reactor. The method may further comprise separating the gas injection zone from the catalyst bed with a porous plate so as to prevent migration of catalyst particles into the gas injection zone and to minimize plugging of gas distributor(s) present in said zone.